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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZACHARIA, RAMSEY E

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 09/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

ME-8

Office Action Summary

Application No.

09/807,904

Applicant(s)

WATANABE ET AL.

Examiner

Ramsey Zacharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8-30,32,33 and 35-37 is/are rejected.
- 7) ☒ Claim(s) 4,7,31 and 34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The references lined through in the second IDS are ones that also appear in the first IDS.

Claim Objections

2. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

3. Moreover, it is not clear if claims 6 and 7 are intended to be multiple dependent claims. In the first preliminary amendment, the claims 6 and 7 were amended to both depend from claim 1 as opposed to claims 3 or 5 and 4 or 5, respectively. However, in the second preliminary amendment, the dependency of these claims was changed back to 3 or 5 and 4 or 5, respectively. It is unclear whether these are intended to be multiple dependent claims, especially since the marked-up copy of the second preliminary amendment does not show a change in the dependency of these claims.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 24 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "hard" in claims 24 and 36 is a relative term which renders the claims indefinite. The term "hard" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Use of the term "hard" renders the hardness of the coating layer indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 10-12, 14-29, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Kazutoshi et al. (JP 8-283425 A).

Note: a machine assisted English translation of JP 8-283425 A is relied upon for this action.

Kazutoshi et al. teach a material that comprises an organic macromolecule and a metal oxide bonded together by hydrolysis and polycondensation wherein there is a gradient in the concentration of the metal oxide through the thickness of the material (paragraph 0001). The concentration of metal oxide varies from 0-50 wt% at the low end to 5-100 wt% at the high end (paragraph 0013). The metal oxide is a metal alkoxide (paragraph 0019-0020). The material

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may be used as a paint, i.e. a coating on a substrate (paragraph 0048). The material is applied from solution followed by drying under heat (paragraph 0023). In the embodiment of Example 1, the organic macromolecule comprises an acrylic resin, i.e. a polymer formed from an ethylenically unsaturated group, and it is applied to a nylon substrate, i.e. an organic polymer substrate, with the surface in contact with the substrate being formed substantially of the organic component of the material (drawing 1 and paragraphs 0052-0055).

Regarding claims 20-27, the limitations in these claims are taken to be intended uses of the product since these claims do not require multiple layers, just that the organic-inorganic composite is for use as an adhesive or an intermediate film. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Regarding claim 32, the paint film is taken to read on an adhesive material since it is designed to adhere to the substrate upon which it is applied.

Claim Rejections - 35 USC § 102 / 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

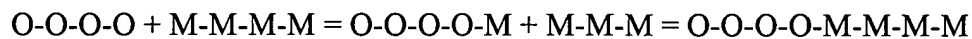
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6, 8, 9, 30, 33, and 35-37 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kazutoshi et al. (JP 8-283425 A).

Kazutoshi et al. teach all the limitations of claims 6, 8, and 9, as outlined above, except for disclosing that the organic macromolecule precursor comprises a metal-containing group.

Kazutoshi et al. also do not teach applying an inorganic layer over the taught paint film.

While, Kazutoshi et al. do not teach that the organic macromolecule comprises a molecule containing a metal-containing group, the resulting material appears to be the same as that of the claims since the resulting material is an organic component bonded to a metal component. That is:



where O represents an organic molecule/monomer and M represents a metallic molecule/monomer.

Therefore, the limitations of claims 6, 8, and 9 may be seen as product-by-process claims since their limitations are directed to the precursors and not the final product. When the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claim in a product-by-process claim, the burden is on the Applicant to present evidence from which the Examiner could reasonably conclude that the claimed product differs in kind from those of the prior art. *In re Brown*, 459 F. 2d 531, 173 USPQ 685 (CCPA 1972); *In re Fessman*, 489 F. 2d 742, 180 USPQ 324 (CCPA 1974). This burden is NOT discharged solely because the product was derived from a process not known to the prior art. *In re Fessman*, 489 F. 2d 742, 180 USPQ 324 (CCPA 1974). Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In*

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re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) and MPEP § 2113. In this case, the burden is on the applicant to conclusively demonstrate that the product of claims 6, 8, and 9 differs from that of the prior art.

Regarding claims 30, 33, and 35-37, while Kazutoshi et al. do not teach the addition of an inorganic layer over the coating layer, there is an explicit teaching that the outer surface of the layer may comprise 100 wt% of the metal oxide (paragraph 0035). In this case, the product of Kazutoshi et al. would read on the product of claims 30, 33, and 35-37, since it would comprise a substrate, a pure metal oxide layer (i.e. an inorganic layer), and an organic-inorganic composite between the substrate and the pure metal oxide layer. That the inorganic layer is applied as a separate coating layer in the instant claims may also be seen as a product-by-process limitation since the final product in both cases appears to be the same.

Regarding claim 35, the claim requires no degree of electrical conductivity. Since all materials are at least somewhat electrically conductive, the pure inorganic layer reads on this claim.

Regarding claim 36, the pure inorganic layer is taken to be a hard layer since it is a metallic layer and because the claim does not require any particular degree of hardness.

Regarding claim 37, the pure inorganic layer is taken to read on a dielectric material layer since the inorganic layer is composed of a metal oxide.

Claim Rejections - 35 USC § 103

11. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazutoshi et al. (JP 8-283425 A).

Kazutoshi et al. teach all the limitations of claims 5, 13, 30, 33, and 35-37, as outlined above, except for the thickness of the paint film being 5 μm or less.

The coating of Kazutoshi et al. is designed to provide excellent solvent resistance and thermal resistance to the article on which it is applied (paragraph 0050). The degree of solvent and thermal resistance is proportional to the amount or thickness of the coating, i.e. the thickness of the coating is a result effective variable. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the thickness of the coating depending on the degree of solvent and/or thermal resistance desired, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

12. Claims 4, 7, 31, and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter.

Claims 4 and 7 are directed to an inorganic-organic graded material as recited in claim 1 and further wherein the metallic compound is a metal nitride that is bonded to the organic polymer through a metal-oxide containing compound. Claims 31 and 34 are directed to three layer structures comprising a substrate, an intermediate layer of the graded material, and a layer of a photocatalytic material.

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Kazutoshi et al. represents the closest prior art. However, Kazutoshi et al. do not teach or fairly suggest the use of a metal nitride compound bonded to the macromolecule through a metal oxide compound. Nor do Kazutoshi et al. teach or fairly suggest the addition of a photocatalytic layer over the organic-inorganic layer.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (703) 305-0503. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (703) 308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 for non after-final correspondences and (703) 872-9311 for after-final correspondences.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Ramsey Zacharia

Patent Examiner

Technology Center 1700

9/20/02